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universally to consist of a vortex with a central spot in a state of profound calm, which spot will probably be greater or less according to the magnitude of the vortex.

No circumstance occurred to me which might justify the hypothesis of the celebrated Franklin who supposed the center of a whirlwind or waterspout to be a true vacuum capable of elevating water to the height of 30 or more feet. It is by no means decided that those two phænomena are of the same species. Whirlwinds are always perpendicular to the horizon and are, I believe, never stationary: an intelligent friend of mine once saw (what he supposed to be) a waterspout descend from a low cloud into the Mississippi, it made a very considerable angle with the perpendicular and its inferior extremity remained fixed to one spot during the whole time of its appearance, the very gentle progress of the cloud seemed to prolong the spout, so that at length it separated into two parts, the inferior division, which was by much the shortest, falling into the Mississippi, and the superior slowly ascending until it became united to the cloud.

No. X.

Abstract of a communication from Mr. Martin Duralde, relative to fossil bones, &c. of the Country of Apelousas west of the Mississippi to Mr. William Dunbar of the Natchez, and by him transmitted to the Society. Dated April 24th 1802.

Read March 4th, 1803.

THE Country of the Apelousas, although favoured by the goodness of the soil and the salubrity of the climate, is subjected to the disadvantage of not being furnished with springs sufficiently permanent to supply the wants of the inhabitants and their cattle; which renders wells necessary at any distance from the rivers. In digging of these wells, which are of considerable depth, bones and other articles have been discovered, some of which are enumerated as follows.

At the widow Moreau's, a human skull, in a very decayed state, was found at the depth of 30 to 35 feet below the sur-

face of the ground. At Mr. Lewis Fontenot's, other bones were found at the depth of 25 to 27 feet. Also at Mr. James Duprès's at the depth of 18 feet; but in both these cases, they were so much decayed, as to render it impossible to distinguish, to what animal they belonged or even what bones they were. At Mr. James Lafleur's, at the depth of 30 to 35 feet, was found a piece of an Indian bowl, made of burnt shells, and baked after the Indian manner. M. Duralde in sinking a well in his cow-yard found sound oyster shells, lying in an horizontal direction, near to each other, at the depth of 22 feet. It was also said that M. Fuselier of the Alacapas found the horn of a Goat at the depth of 19 feet. Those of the above discoveries which M. Duralde was not witness to, were attested to his satisfaction—and he supposes many others escaped the notice of the workmen and proprietors.

About the year 1760 or a little after, some person was led by chance to the margin of a small bay called Carancro and observed there a large heap of bones; they were sound and of an enormous size. He was struck with the discovery and made mention of it; and as the news of it spread, the public curiosity was very much excited. Their length, their size, and above all one or two teeth, which were amongst them, led the spectators to judge that this had been the entire skeleton of an Elephant. This soon became the generally received opinion. They perfectly distinguished, the ribs, the vertebræ, the scapulæ, the tibiæ, the thigh bone (which was larger than a man's thigh,) and lastly the hip bone, which had a very distinct cavity for the reception of the head of the thigh bone—M. Nerat the proprietor of the spot where they were found, a man of strict varacity and residing near it, declared that there were bones enough to load two, or at least one very large cart; that he had taken, and during ten years had made use of, the hollow of the hip bones, to press his indigo in, that as well as he can remember there was one of the haunch bones wanting, which forms apart of the eminence of the bason, and that notwithstanding, it was so heavy, that it required a very strong man to handle it.

Six years ago during the time of a great drought, Alexander Fontenot perceived, and took up from the bottom of a brook,

about five feet deep, an extraordinary tooth standing upright, being part above and part under ground. The great size of this, and a remnant of ivory which was found with it, induced the belief, that it had belonged to an Elephant. It was already much decayed, and has disappeared from his yard, after having been tossed about it, during three or four years. The place was again thoroughly examined by directions of M. Duralde, but without making any further discovery.

Mr. John Teston, a man of integrity, declared that about 15 years ago he found the remains of an enormous jaw-bone in a brook on his plantation, weighing as he judged 25lb. He took it up, and shewed it to several persons, all of them unfortunately of little knowledge or experience in these subjects; but, from a faint recollection of what had been discovered at Carancro, they supposed that it must have belonged to an Elephant. He pointed out to M. Duralde the place from whence it was taken, but there only remained some small pieces of bone much scattered, none exceeding an inch in diameter, and totally insufficient to lead the most intelligent observer to any important conclusion. These two brooks are separated from each other from 750 to 900 Toises, and distant from Carancro about four or five leagues.

M. Duralde accompanies the above facts by the following observations.

These bones, which were supposed to be those of the Elephant, have been discovered, on the borders of brooks passing through Prairies, in a clay soil at the depth of a few feet; except those at Carancro, which were found heaped up on a small point of sand, at the mouth of another brook of the same kind as those mentioned, and which may have been deposited there by the floods.

The inhabitants of this country think that the surface thereof has risen visibly; because these marshes which were impassable to man and beast when they settled there, will at present allow a free passage over them even on horseback at the end of summer and beginning of autumn. This fact is really so, and I believe there are two causes of the diminution of water; the one is the evaporation occasioned by the sun, the other the travelling of the cattle; they wear the

road and make a dust, which the rains carry off to these places, by which the bottom becomes insensibly raised, when it dries, and is hardened by the going and coming of these animals. This, if I do not deceive myself, is the solution of the problem; my opinion arises from the inspection of certain low places, which appear most certainly to have been morasses formerly; for although they are now become firm and solid, yet we can still observe the places of all the tufts of reeds, with the intervals which have separated them, such as we find them in muddy marshes. Whatever may be the cause of this elevation, the nature of the soil warrants the opinion, that it has not been caused by alluvions.

There is also an appearance in this range of country, which is very common, but which continues to surprise me every time I observe it; namely, the circular form of certain marshes of different diameters upon the highest grounds. I have not ascertained the fact mathematically, but the eye so well attests their regularity, that it seems as if art could not have rendered them more perfect. These marshes are not deep, and most of them dry up in times of great drought, and the bottom deepens gradually from the circumference to the centre. I have never observed them without endeavouring to ascertain the cause of them; none other, equally satisfactory, has presented itself to my mind, than that they were cavities which have been thus excavated by some whirlpool, at the time the whole surface was covered by water. I cannot help avowing, even at the risk of being accused of temerity, that the existence of these marshes, combined with the circumstance of finding these bones at such extraordinary depths, and also with a tradition of the Alacapas (a neighbouring Indian tribe) has almost convinced my mind that such a state of things existed at some very distant period.